

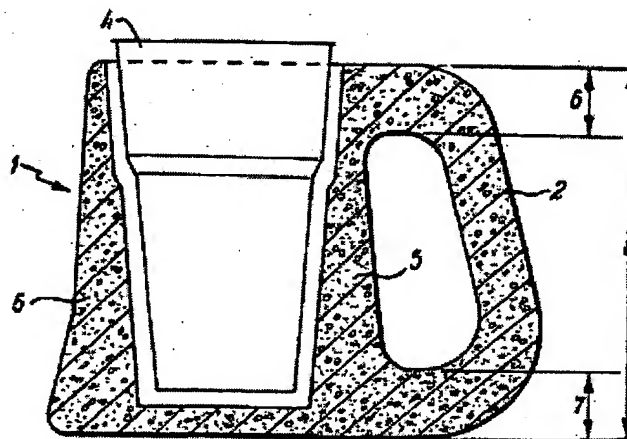
## Drinking vessel holder

**Patent number:** GB2355918  
**Publication date:** 2001-05-09  
**Inventor:** ROBINSON LEE (GB); HINE RAY (GB)  
**Applicant:** PROT PACKAGING LTD (GB); HINE RAY (GB)  
**Classification:**  
**- International:** A47G23/02  
**- european:** A47G23/02A2; B29C44/34D; B65D81/38K1  
**Application number:** GB19990026214 19991105  
**Priority number(s):** GB19990026214 19991105

Report a data error here

### Abstract of GB2355918

A drinking vessel holder (1) is formed from a lightweight foamed plastics material. The holder (1) includes a handle (2) of sufficient strength to support the holder and a drinking vessel full of liquid. The holder (1) may be moulded from expanded polystyrene which preferably has a density of at least 30 grams/litre more preferably at least 40 grams/litre. The handle (2) may be formed integrally with the holder and may form a closed loop. The holder may define a cavity for accommodating a drinking vessel to be supported and may have the outward appearance of a drinking vessel, particularly a tankard or stein. The holder may be made by filling a moulding cavity with pre-expanded polystyrene beads and steaming the beads to fuse them together. The steam may be injected into the cavity of the holder and exhausted through the outside surface of the holder, and then passed in the reverse direction.



**FIG. 2**

# (12) UK Patent Application (19) GB (11) 2 355 918 (13) A

(43) Date of A Publication 09.05.2001

(21) Application No 9926214.9

(22) Date of Filing 05.11.1999

(71) Applicant(s)  
**Protection Packaging Ltd**  
(Incorporated in the United Kingdom)  
Victoria Works, Parker Street, Rishton, BLACKBURN,  
BB1 4NT, United Kingdom

**Ray Hine**  
Avonvale Dennett Road, BEMBRIDGE, Isle of Wight,  
PO85 5XD, United Kingdom

(72) Inventor(s)  
**Lee Robinson**  
**Ray Hine**

(74) Agent and/or Address for Service  
**Wilson Gunn M'Caw**  
41-51 Royal Exchange, Cross Street, MANCHESTER,  
M2 7BD, United Kingdom

(51) INT CL<sup>7</sup>  
**A47G 23/02**

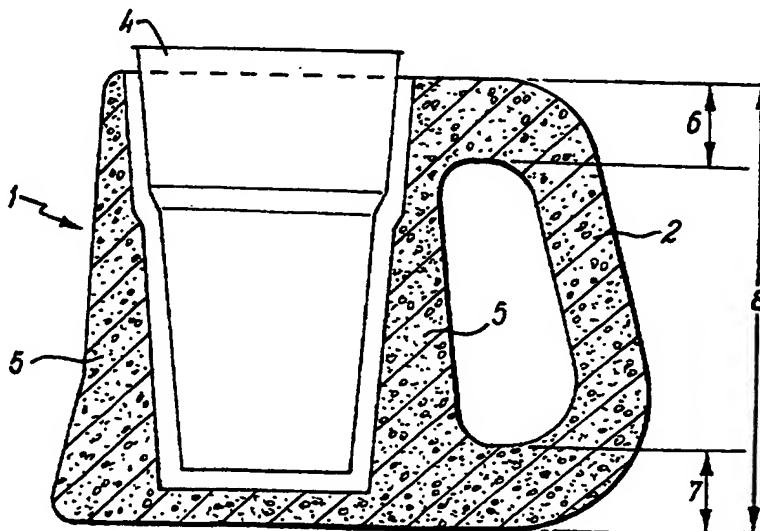
(52) UK CL (Edition S )  
**A4A AU**  
**B5A AM4G1 A1R314C1D A1R411 A1R420 A2A4B**  
**A2E10 A2E3**

(56) Documents Cited  
**US 5555746 A** **US 4927047 A** **US 4813558 A**

(58) Field of Search  
UK CL (Edition R ) **A4A AU**  
INT CL<sup>7</sup> **A47G 23/02**  
**ONLINE:EPODOC, JAPIO, WPI**

(54) Abstract Title  
**Drinking vessel holder**

(57) A drinking vessel holder (1) is formed from a lightweight foamed plastics material. The holder (1) includes a handle (2) of sufficient strength to support the holder and a drinking vessel full of liquid. The holder (1) may be moulded from expanded polystyrene which preferably has a density of at least 30 grams/litre more preferably at least 40 grams/litre. The handle (2) may be formed integrally with the holder and may form a closed loop. The holder may define a cavity for accommodating a drinking vessel to be supported and may have the outward appearance of a drinking vessel, particularly a tankard or stein. The holder may be made by filling a moulding cavity with pre-expanded polystyrene beads and steaming the beads to fuse them together. The steam may be injected into the cavity of the holder and exhausted through the outside surface of the holder, and then passed in the reverse direction.

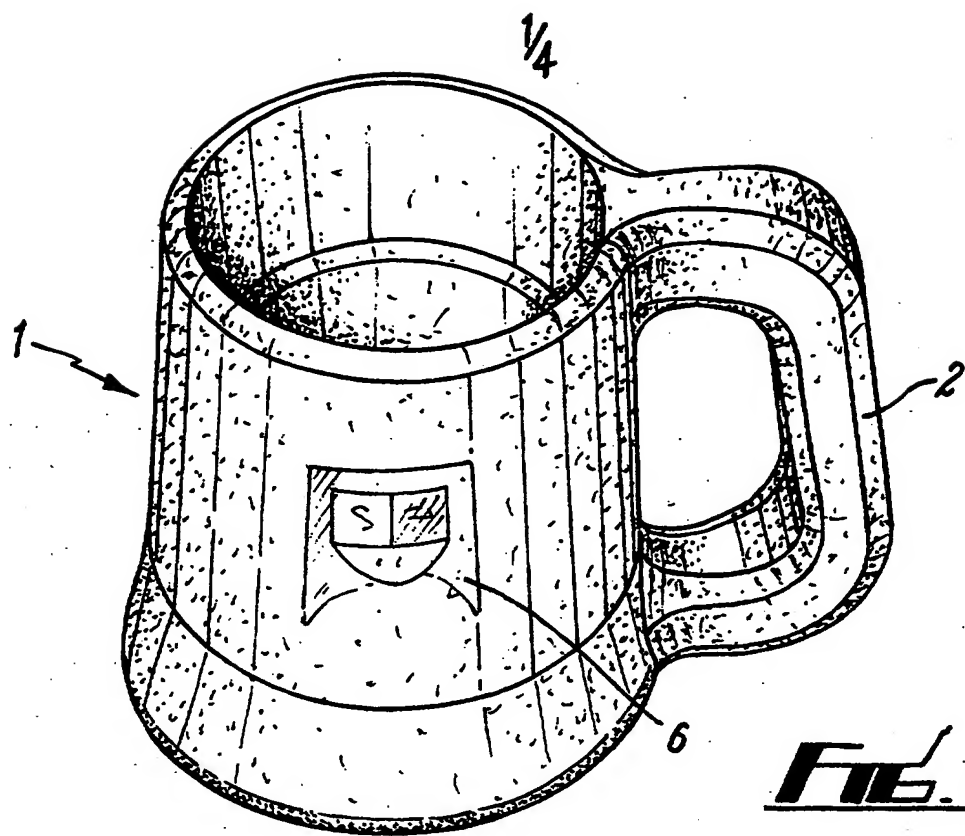


**FIG. 2**

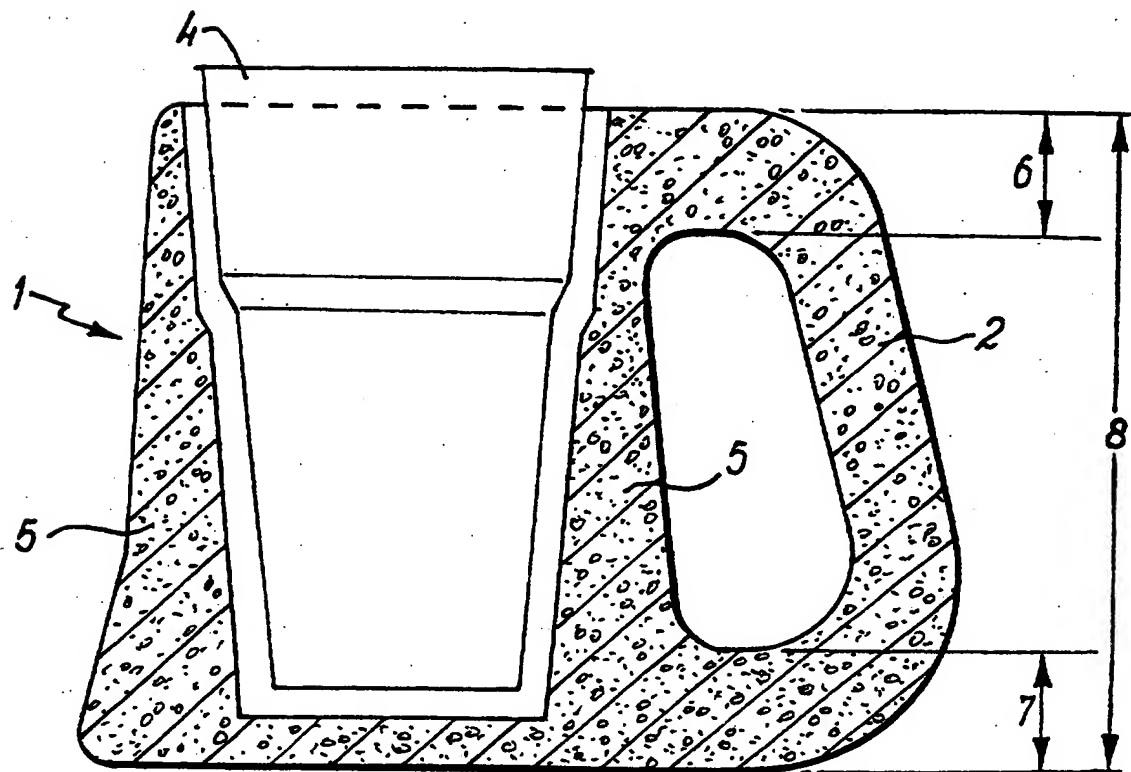
At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date but within the period prescribed by Rule 25(1) of the Patents Rules 1995.

GB 2 355 918 A

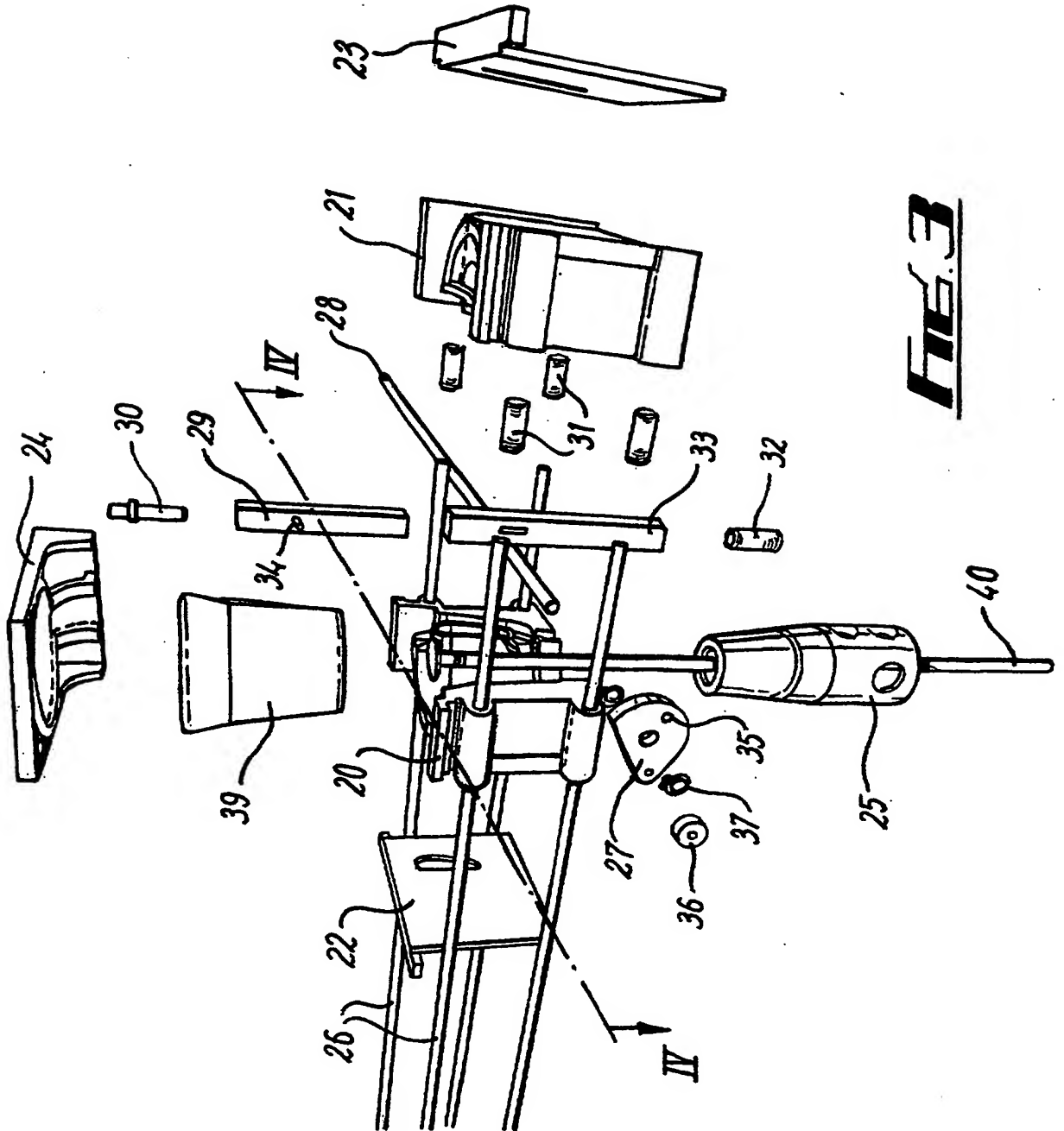


**FIG. 1**

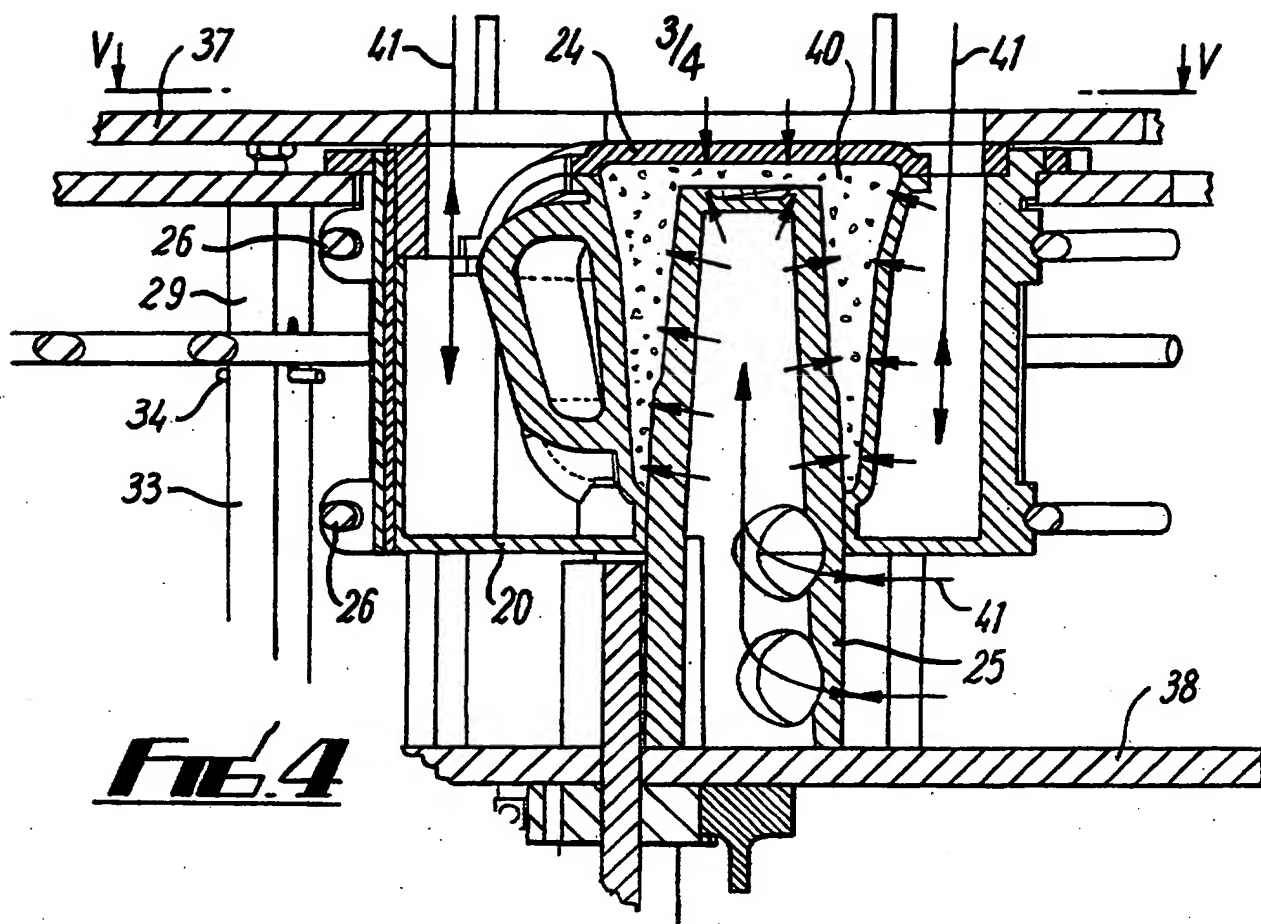


**FIG. 2**

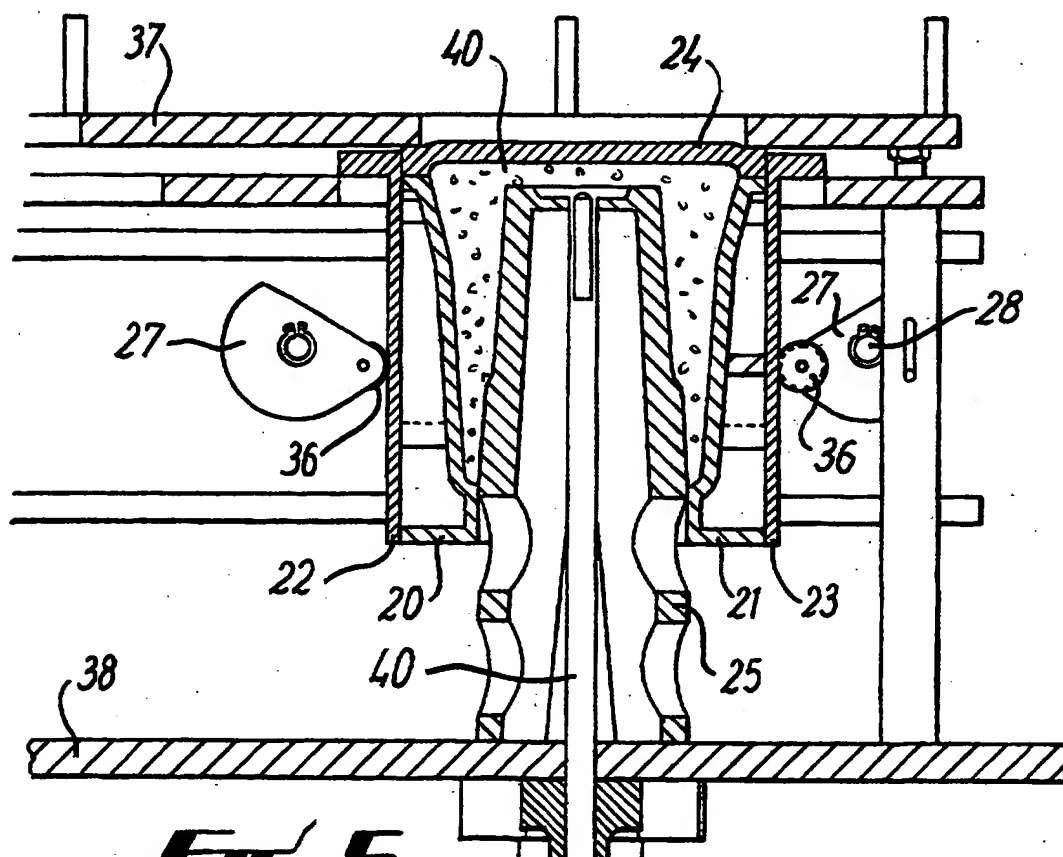
2/4



**HE3**

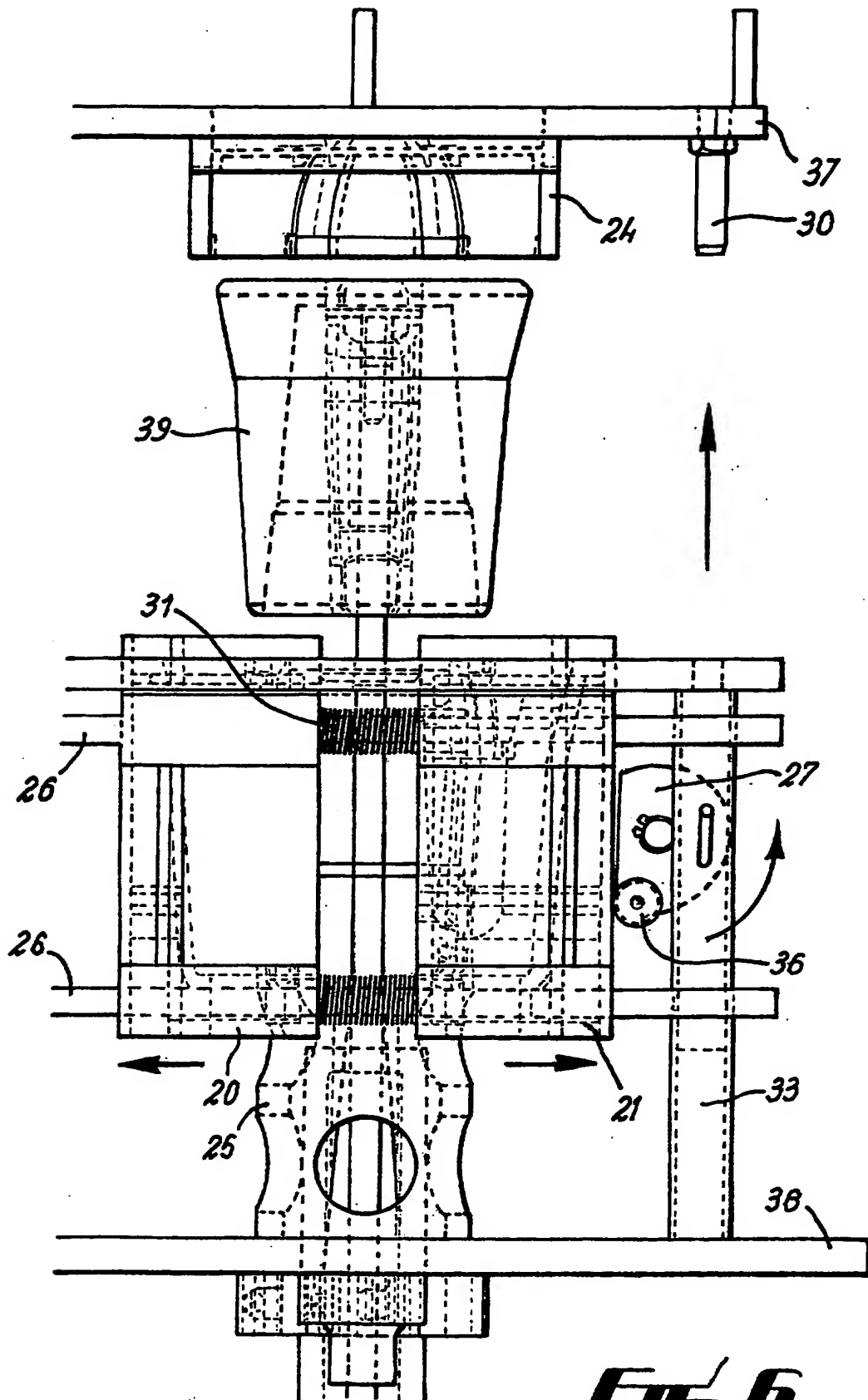


**FIG. 4**



**FIG. 5**

4/4



**FIG. 6**

## DRINKING VESSEL HOLDER

The present invention relates to a drinking vessel holder.

Where drinks are sold for consumption outdoors, for example at outdoor functions, it is increasingly common for them to be served in disposable plastic drinking vessels, often called "plastic glasses", rather than conventional glass ones. In fact, in some countries this is required by regulations. The use of plastic rather than glass drinking vessels is safer because it eliminates risk of there being broken glass which could cause injury. Plastic drinking vessels are also economic to produce.

However, plastic drinking vessels are generally not as satisfying to the consumer to hold or drink from as conventional glassware. This is particularly so with half and one pint pots used to serve beer, lager and other long drinks. These beakers must be manufactured sufficiently economically so that they can be regarded as disposable and are typically rather flimsy. They can be easily flexed when full of liquid, which can lead to spillage. They are also prone to splitting.

The present invention has been made in consideration of these and other problems with conventional disposable plastic drinking vessels.

According to an aspect of the present invention there is provided a drinking vessel holder formed from a lightweight foamed plastics material, including a handle of sufficient strength to support the holder and a drinking vessel full of liquid.

According to another aspect of the present invention there is provided a drinking vessel assembly comprising a drinking vessel holder formed from a lightweight foamed plastics material including a handle of sufficient strength to support the holder and a drinking vessel full of liquid and a drinking vessel, supported by the holder.

According to another aspect of the present invention there is provided a method of making a drinking vessel holder including a handle of sufficient strength to support the holder and a drinking vessel full of liquid comprising the step of moulding the holder from a foamed plastics material.

The holder may be used to hold disposable plastic drinking vessels and thus to overcome the problems associated with such vessels. Forming the holder from a lightweight foamed plastics material makes it economical to produce, so much so that it can be regarded as disposable.

The holder is preferably moulded from expanded polystyrene. When producing a holder from a lightweight material such as expanded polystyrene problems are encountered in forming a handle of sufficient strength to support a drinking vessel full of liquid, particularly a conventional plastic pint pot which, when full, has a mass of about 500 grams. To help provide sufficient strength the density of expanded polystyrene is preferably relatively high, for example at least 30 grams/litre and preferably about 40 grams/litre. The holder is preferably moulded in one piece, so that the handle is integrally formed. The handle preferably forms a closed loop.



Both these features also help increase the strength of the handle.

Further, the vertical distance over which the handle is joined to the remainder of the holder is preferably at least 20% of the height of the holder, more preferably at least 30% of the height of the holder. This, whilst unconventional in conventional drinking vessel and drinking vessel holder design, serves to provide a structure of sufficient strength even when lightweight materials, for example expanded polystyrene, are used. The top and bottom surfaces of the handle may be coincident with the top and bottom surfaces of the holder. The holder preferably defines a cavity for accommodating a drinking vessel to be supported. The cavity may be of sufficient size to substantially wholly accommodate a drinking vessel to be supported. The inside shape and dimensions of the cavity preferably closely correspond to the outside dimensions of a drinking vessel to be accommodated. The drinking vessel will therefore fit closely into the holder. This is desirable to prevent relative movement between vessel and holder. The shape of the outside of the holder may be different to the shape of the inside of the cavity. The holder may have the outward appearance of a drinking vessel, particularly a tankard or stein.

The method of making a holder preferably includes the steps of filling a mould cavity with pre-expanded polystyrene beads and steaming the beads to fuse them together. Preferably steaming takes place in two stages, one where steam is injected into the cavity of the holder and

exhausted through the outside surface of the holder and another where steam is passed in the reverse direction, that is through the outside surface of the holder and exhausted from the cavity. This ensures good fusion of the polystyrene bead.

5           In order that the invention may be more clearly understood an embodiment thereof will now be described, by way of example, with reference to the accompanying drawings in which:-

Figure 1       is a perspective view of a drinking vessel holder according to the invention;

10       Figure 2       is a vertical cross-sectional view of the holder of Figure 1 with a drinking vessel shown partially displaced therefrom;

Figure 3       is an exploded perspective view of apparatus for making a holder of the type illustrated in Figure 1, also showing a holder;

15       Figure 4       is a cross-sectional view through the apparatus of Figure 3 taken along the line IV-IV, during manufacture of a holder;

Figure 5       is a cross-sectional view through the apparatus of Figure 4 taken along the line V-V; and

20       Figure 6       is a side elevational view of the apparatus of Figure 3 showing how a completed holder is removed.

Referring to Figures 1 and 2 a drinking vessel holder has the outward shape of a conventional tankard, with a closed loop handle 2.

The holder 1 includes a cavity 3 arranged to wholly accommodate and support a conventional disposable one pint plastic pot 4. The walls of the cavity 3 are tapered and include a step formation. They correspond in shape to that of the vessel 4 to be supported so that it will closely fit inside the holder 1. Of course, the size and shape of the cavity could be varied to accommodate and cooperate with different designs of drinking vessel.

The holder 1 is formed from expanded polystyrene and can therefore be produced cheaply. The holder has sufficient strength and rigidity so that a drinking vessel 4 full of liquid may be supported by way of the handle 2. A number of the features of the design of the holder contribute to this.

The holder 1 is moulded in one piece from pre-expanded polystyrene. The handle is therefore integrally formed which eliminates a potential weakness which may occur were the handle formed separately and subsequently joined to the remainder of the holder. The density of the expanded polystyrene is relatively high, about 40 grams/litre. The holder is moulded from pre-expanded polystyrene bead which is then fused with steam in a two stage process to achieve good fusion, this is described in greater detail below. The side walls 5 of the holder are relatively thick compared to the overall size of the holder. The lowermost part of the body of the holder, from which the lower part of the handle 2 extends, is generally frustoconical in shape. The side walls 5 of the holder taper upwardly from the frustoconical part. The upper part of the handle 2

extends from the top of the side wall 5. The top of the handle 2 is coincident with the top of the holder 1, and the bottom of the handle 2 is coincident with the bottom of the holder 1.

5 The handle 2 is relatively thick where it joins the remainder of the holder 1, compared to some conventional tankard designs. In particular, the vertical distance over which the handle 2 is joined to the remainder of the holder 1 is about 36% of the overall height of the handle 2 which, since this extends from the top to bottom of the holder 1 (with which it is flush) corresponds to the height of the holder 1. That is, the sum of distances 6  
10 and 7 represents about 36% of the distance 8.

The outside of the holder carries some information 6. This could, for example, be used to promote a product, say beer, or an event, say a regatta.

15 In use a conventional disposable plastic pint pot 4 is placed into the holder, either before or after filling with liquid. The holder is then used to hold the pint pot to drink the liquid. The holder is much more satisfying to hold and drink from than the plastic pot alone. When the drink has been consumed the plastic pot may be removed for disposal. The holder can be re-used.

20 The holder, being produced from expanded polystyrene is economical to produce and as it can carry advertising information is ideal for promotional activities. Because the holder wholly accommodates the pint

pot it gives the outward appearance of a tankard.

The holder shown in Figures 1 and 2 is moulded in one piece from pre-expanded polystyrene bead and may be produced using the equipment shown in Figures 3 to 6.

5 Referring to these Figures moulding apparatus comprises a number of relatively movable mould parts: left and right hand cavities 20, 21 with respective side plates 22,23, a core 24 and cavity pin 25. The cavities 20,21 and side plates 22,23 are mounted for movement along guide bars 26. Springs 31 are disposed on the guide bars 26 between the cavities  
10 21,22 to urge them apart. In use the cavities 21 and 22 may be urged together by cams 27 (only one of which is shown in Figure 3) which include bearings 36 to bear on the cavities. One cam is rotated by way of an actuator bar 29 having a pin 34 arranged to engage with an aperture 35 in the cam. The actuator bar 29 is slidably mounted in a sleeve 33 in which  
15 is disposed a spring 32 arranged to urge the bar 29 out of the sleeve 33 so as to release the cams. The actuator bar 29 is in turn actuated by a pin 30 which is mounted on a plate 37 alongside the core 24. The cam 27 engaged with the actuator is mounted on a shaft 28 connected to another cam. The cam 27 is retained on the shaft with a circlip 37.

20 The actuator bar 29 and sleeve 33 are mounted between two relatively movable plates 37 and 38 of a moulding machine on which are mounted the core 24 and pin 25. Thus, when the core 24 and pin 25 are

brought together, using the moulding machine, the cavities and side plates are also brought together through the action of the actuator bar 29, sleeve and cams 27.

5 The mould parts, when brought together, define a cavity for producing a holder 39.

10 In use the mould parts are brought together and the cavity they define is filled with pre-expanded polystyrene bead 40 to a density of approximately 40 grams/litre. Steam is then injected through the pin 25 and evacuated through the cavities 20 and 21 to fuse the polystyrene. The inside surfaces of the pin and cavities are porous. To ensure good fusion, to produce a holder of sufficient strength, the steaming process is then reversed, steam being ejected from the cavity and evacuated through the core. The path of the flow of steam is shown in Figure 4, marked 41. It is particularly important that the handle of the holder and the region where it joins the holder body is well fused.

15

When the holder has been fused plates 37 and 38 are separated where the cavities 20 and 21 will separate by the action of springs 31 and 32. The completed holder 39 can then be ejected from the mould by an injector pin 40 which is arranged to move within pin 25.

20 Advertising material or other decoration may now be applied to the holder.

The above embodiment is described by way of example only. Many

variations are possible without departing from the invention.

CLAIMS

1. A drinking vessel holder formed from a lightweight foamed plastics material, including a handle of sufficient strength to support the holder and a drinking vessel full of liquid.
2. A drinking vessel holder according to claim 1 moulded from expanded polystyrene.
3. A drinking vessel holder according to claim 2 wherein the density of the expanded polystyrene is at least 30 grams/litre.
4. A drinking vessel holder according to claim 3 wherein the density of the expanded polystyrene is at least 40 grams/litre.
5. A drinking vessel holder according to any preceding claim which is moulded in one piece, so that the handle is integrally formed with the remainder of the holder.
6. A drinking vessel holder according to any preceding claim wherein the handle forms a closed loop.
7. A drinking vessel holder according to any preceding claim wherein the vertical distance over which the handle is joined to the remainder of the holder is at least 20% of the height of the holder.
8. A drinking vessel holder according to any preceding claim wherein the vertical distance over which the handle is joined to the remainder of the holder is at least 30% of the height of the holder.
9. A drinking vessel holder according to any preceding claim wherein the top and bottom surfaces of the handle are coincident with those of



the holder.

10. A drinking vessel holder according to any preceding claim which defines a cavity for accommodating a drinking vessel to be supported.
11. A drinking vessel holder according to claim 10 wherein the cavity is of sufficient size to substantially wholly accommodate a drinking vessel to be supported.
12. A drinking vessel holder according to either claim 10 or 11 wherein the inside shape and dimensions of the cavity closely correspond to the outside dimensions of a drinking vessel to be accommodated.
13. A drinking vessel holder according to any preceding claim having the outward appearance of a drinking vessel.
14. A drinking vessel holder according to claim 13 having the outward appearance of a tankard or stein.
15. A drinking vessel assembly comprising a drinking vessel holder as claimed in any preceding claim and a drinking vessel, supported by the holder.
16. A method of making a drinking vessel holder including a handle of sufficient strength to support the holder and a drinking vessel full of liquid comprising the step of moulding the holder from a foamed plastics material.
17. A method according to claim 16 wherein the drinking vessel holder is moulded from expanded polystyrene.
18. A method according to claim 17 including the steps of filling a

moulding cavity with pre-expanded polystyrene beads and steaming the beads to fuse them together.

19. A method according to claim 18 wherein steaming takes place in two stages; one where steam is injected into the cavity of the holder and exhausted through the outside surface of the holder and another where steam is passed in the reverse direction, that is through the outside surface of the holder and exhausted from the cavity.
20. A drinking vessel holder substantially as herein described with reference to figures 1 and 2 of the accompanying drawings.
21. A drinking vessel holder assembly substantially as herein described with reference to figures 1 and 2 of the accompanying drawings.
22. A method of making a drinking vessel holder substantially as herein described with reference to figures 3 to 6 of the accompanying drawings.